

NON-PUBLIC?: N
ACCESSION #: 9005010061
LICENSEE EVENT REPORT (LER)

FACILITY NAME: LaSalle County Station Unit 1 PAGE: 1 OF 04

DOCKET NUMBER: 05000373

TITLE: Reactor Scram Caused by Generator Trip Due to B Phase Insulator
Failure and Subsequent Flashover to Ground
EVENT DATE: 03/28/90 LER #: 90-006-00 REPORT DATE: 04/27/90

OTHER FACILITIES INVOLVED: LaSalle Unit 2 DOCKET NO: 05000374

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Larry A. Bukantis, Technical Staff TELEPHONE: (815) 357-6761
Engineer, extension 2576

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: EL COMPONENT: INS MANUFACTURER:
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On March 28, 1990 at 0337 hours Unit 1 was in Operational condition 1 (Run) at 100% power. At this time the B phase insulator between the Unit 1 east/west main power transformers and the switchyard, failed and flashed over to ground. As a result of this flashover, the B and C phase differential current relays both tripped causing the Unit 1 main generator to lockout, which resulted in a main turbine trip. This immediately caused the Unit 1 reactor to scram. Three Safety Relief Valves actuated to control reactor pressure.

The B phase insulator was replaced on March 29, 1990. The remaining insulators were inspected and no significant problems were noted. One additional insulator was replaced due to minor chipping. Unit 1 was started back up and the generator synchronized to the grid at 0310 hours on March 31, 1990.

This event is reportable pursuant to the requirements of 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature system.

END OF ABSTRACT

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as XX!.

A. CONDITION PRIOR TO EVENT

Unit(s): 1/2 Event Date: - 3/28/90 Event Time: 0337 Hours

Reactor Mode(s): 1/Defueled Mode(s) Name: Run/Defueled Power Level(s): 100%/0%

B. DESCRIPTION OF EVENT

On March 28, 1990 at 0337 hours, with Unit 2 defueled and Unit 1 in Operational Condition 1 (Run) at 100% power, the first B phase underslung insulator east of the Unit 1 east and west Main Power Transformers (MPT) EL! failed. As a result of this, the B and C phase differential current relays both tripped causing the Unit 1 main generator to lockout which resulted in a main turbine trip. This caused the Unit 1 reactor to scram due to turbine stop valve closure at greater than 30% power. The Reactor Recirculation (RR) AD! pumps also downshifted as required when the turbine stop valve closure initiated the RR pump trip circuit.

Upon receiving the differential current trip, the Unit 1 east and west Main Power Transformers fire protection deluge (FP) KP! actuated. The actuation of deluge after a fault is normal.

Safety Relief Valves (SRV, MS) SO! S, U, and K actuated to control reactor pressure. The Division 2 Lo-Lo Set (LLS) actuation was initiated, however, the Division 1 Lo-Lo Set actuation did not occur. This was due to the fact that the Division 2 SRV pressure switch settings were found to be slightly lower than Division 1 and reactor pressure never reached the actual pressure switch setpoints

for the Division 1 U or K SRV's. Two pressure switches per Division have to actuate before a Divisional Lo-Lo Set circuit is actuated. Therefore the requirements for a Division 1 Lo-Lo Set actuation was never met.

Control rod 18-51 initially showed position "XX." The Rod Position Indication System (RPIS) will indicate position "XX" for various reed switch combinations that would not normally be expected, such as the "Full-In" reed switch actuated but not the "00." Normally after a scram the control rods are driven past the "00" switch. For most rods, resetting the scram is sufficient to let the drive settle back down and pick up the "00" switch. However, due to the variations in initial drive temperatures, and the physical positioning of the reed switches, some drives may have to cool down slightly even after the scram is reset in order to indicate "00." For rod 18-51, the Rod Worth Minimizer (RWM) AA! log shows that RWM saw it pass "00" on the way to full in at the same time that the rest of the control rods reached "00." Therefore, this rod was full in and sitting above the "00" position. Approximately 30 minutes later, the rod had settled back down and the "00" reed switch was activated as evidenced by a process computer rod position printout showing all rods indicating "00."

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B. DESCRIPTION OF EVENT (Continued)

Due to the fault and interconnected ring bus, the Unit 1 System Auxiliary Transformer (SAT) experienced a momentary undervoltage condition. This caused an actuation of radiation monitor 1D18-K751C on bus undervoltage. Upon receipt of the Control Room Hi Radiation Monitor trip the A Emergency Makeup Train of Control Room Ventilation (VC) VI! actuated as designed.

The Unit 1 fault also caused voltage transients on both of Unit 2's power supplies (SAT and UAT backfeed). The 2A Service Air (SA) LF! compressor tripped when power to the compressors "High Temperature" relay and "Low Oil Level" relay was momentarily deenergized, due to this transient. The loss of SA for Unit 2, in this case, was not serious because the unit was shutdown. If Unit 2 had been operating, loss of SA would be considered a more significant problem. However, experience has shown recovery is possible after a loss of this type with the unit in operation. Also lost during this voltage transient was the Unit 2 Reactor Building Ventilation (VR) VA! fans. The loss of these fans was attributed to the momentary loss of power to the fan room "Door Open" interlock relay (this trip

is for personnel protection). This transient also caused a large number of relays to alarm but did not necessarily cause equipment actuations.

This event is reportable pursuant to the requirements of 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature System.

C. APPARENT CAUSE OF EVENT

The apparent cause of this event was the failure of a B phase underslung insulator that is located east of the Main Power Transformers. It appears that this insulator failed causing a flashover to ground. No signs of foreign material or visual cracks could be found among the remains.

D. SAFETY ANALYSIS OF EVENT

Safety features were initiated, as designed and expected. The turbine trip initiated the proper reactor scram. The event was consistent with a similar event described in the Updated Final Safety Analysis Report (UFSAR), Chapter 15.2.3. It is not expected that this event would have been worse under different initial conditions.

E. CORRECTIVE ACTIONS

1. The B phase underslung insulator was replaced on March 29, 1990. The remaining insulators were inspected and no significant problems were noted. One additional insulator was replaced due to minor chipping. Unit 1 was started up and the generator synchronized to the grid at 0310 hours on March 31, 1990.
2. The Unit 1 Main Power Transformers 1 east and 1 west were both meggered and high pot tested prior to bringing the unit back on line. No problems were noted.

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E. CORRECTIVE ACTIONS (Continued)

3. Unit 1 transformer gas samples were pulled and analyzed by Commonwealth Edison's Technical Center. The results of Technical Center's analysis were acceptable and the transformers were allowed to be reenergized.

4. An investigation into the history and maintenance of the various insulators used at LaSalle Station will be conducted. Action Item Record #373-200-90-030 will track this investigation.

F. PREVIOUS EVENTS

LER Number Title

373/89-009-01 Unit 1 Reactor Scram Due to Loss of Unit 2 SAT Transformer

G. COMMENT FAILURE DATA

Manufacturer Nomenclature Model Number MFG Part Number

LAPP Insulator Insulator 97592-70

ATTACHMENT 1 TO 9005010061 PAGE 1 OF 1

Commonwealth Edison
LaSalle County Nuclear Station
Rural Route #1, Box 220
Marseilles, Illinois 61341
Telephone 815/357-6761

April 27, 1990

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Dear Sir:

Licensee Event Report #90-006-00, Docket #050-373 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

G.J. Diederich
Station Manager
Lasalle County Station

GJD/LAB/kg

Enclosure

xc: Nuclear Licensing Administrator
NRC Resident Inspector
NRC Region III Administrator
INPO - Records Center

*** END OF DOCUMENT ***
